

Overview on Models and Standards Classification in E-Learning System

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ABSTRACT

E-learning is interface of information technology and educational technology which use of the tools to exchange information electronically and will be done with different models. Increasing access to hardware and software for e-learning, especially development of internet technology, educational institutions should modify education methods. Certainly, e-learning as a new method for teaching and learning has been welcomed in most parts of the world which can have many benefits for teachers, students and organizations. With improve facilities, equipment and infrastructure needed for e-learning can be established training courses at any time and any place and access to training programs and information resources and provided opportunities need to enhance knowledge and learn new skills. To implement and use the benefits of e-learning should recognize models and standards of e-learning. In this paper has been checked the concepts, principles, features, benefits and types of e-learning models and standards classification and instructional design models in the e-learning system.

KEYWORDS: E-Learning, Educational Technology, Standards, Information Technology, Information Society

1. INTRODUCTION

Nowadays progress in any society is based on the information (Dargahi *et al.*, 2007). E-learning system is a very important topic in recent years. Computer-Assisted Learning (CAL) can be defined as any form of instruction that uses the computer to present information with ultimate goal, to enhance student learning (Noori *et al.*, 2007). Increasing Internet penetration in the world and also create significant improvements in the use of information technology in business, industry, services, training and ... result very strong interest in not only developed countries, but developing countries to the e-learning. Creation of extensive communication networks such as internet, along advanced tools and educational facilities can be eases learning for students without considering distance and time. Traditional methods of training, is not responsible for the huge demand for education and literacy, e-learning has been proposed instead traditional literacy as a new strategy for achieving Information Society. E-learning is a new education method which can have more benefits than traditional learning. It may be used with other forms of education, including face-to-face instruction. Trainers using these new technologies were successful educational programs to millions seek learning opportunities and thereby reach out to the educational spaces, training centers to

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expand. E-learning takes place in open and dynamic learning and information networks (Zhao *et al.*, 2011; Tudevdagva & Hardt, 2011; Samuel & Subhashini, 2011; Behrouzian Nejad & Nejad, 2011). In recent years we have witnessed an increasingly heightened awareness of the potential benefits e-learning.

The reminder of this paper is organized as follows. In Section 2, we review the e-learning ideas. Instructional design models and models in the e-learning are discussed in sections 3 and 4. Sections 5, 6 and 7 describe economic evaluation of e-learning, e-learning standards and classification of e-learning standards. Finally, Section 8 contains the summary and the conclusion of the paper.

2. E-learning

E-learning is one method to apply IT tools in education and manpower training with the aim of reducing movement, time and cost savings, better and easier to learning. In fact, e-learning uses from IT to remove time and place constraints of educational services. In other words, if the last days, time and place of work, number of universities and schools known as the main factors for training, today, can achieve to electronic service delivery for providing access to educational services using safe intermediaries and without physical presence (Behrouzian Nejad *et al.*, 2011; Noori *et al.*, 2007). In other words, in (Talaat and Hassanein, 2011) e-learning is essentially the computer and network enabled transfer of skills and knowledge. E-learning application and process include Web-based learning; computer based learning, virtual classroom opportunities and digital collaboration. Content can delivered via the internet, intra/extranet, audio or video tape, satellite, TV, and CD-ROM. It can be self-placed or instructor- led and includes media in the form of text, image, animation, streaming video and audio.

2.1 Six principles of effective e-learning

Principles of effective e-learning can be outlined as follows (Dargahi *et al.*, 2007):

2.1.1 Multimedia Principle

Graphics can enhance better learning. Graphic refers to different types of images, such as fixed graphics like lines, tables and photographs and moving graphics such as animations and graphic film. Although graphics can enhance learning but the selection of text and graphics with consistent is very important.

2.1.2 Proximity principle

Placing text near graphics can improve learning. Proximity refers to the row of graphics and text on the screen. That should put them close together.

2.1.3 Modalities principle

Describing audio-visual graphics can increase learning. This work is used especially in the verbal description of an animation or a complex picture which almost obscure and unfamiliar subject.

2.1.4 Addition principle

Verbal description of graphics with additional contents may be able to impair learning. Researches show that when a graphic is a combination of text and speech, learning would be affected.

2.1.5 Integration principle

Use of unreason and false images, text and sound can hurt to learning. For example addition of games or other method in education is false.

2.1.6 Especially principle

Must be used to learn from speak or converse method.

These principles are bases of e-learning, because e-learning programs should be based on a combination of graphics, text and sound. They seem to have a better idea.

2.2 Features of E-Learning System

E-Learning has many features; we can describe (Atashak, 2007):

- *Teacher*: Teachers in this method always subject to question and criticize the competition with others, therefore, teacher will be update, will not survive in the educational system.
- *Fair look to the knowledge seekers*: All segments of society to expand access to learning and opportunity, a great step forward for social justice in education.
- *Flexibility and tolerance*: In this manner, speed and talent of the courses offered is comprehensive and has changed and repeated discussions, there is no waste of time.
- *Audience Groups*: In the e-learning there are particular tools for audience group. Some of these tools include: assessment of candidates and determine the type of access set specific limits for each class of learners and the academic requirements to achieve some of the courses.
- *Free Education*: In learning there are a lot fields and conditions to closer to a free public education. Some of these include: reducing the cost of their education classes, no need to account for ancillary costs such as buildings, universities, etc.

2.3 Groups that can use of E-Learning

With E-learning, many groups can use of benefits of education. Some of these groups include (Atashak, 2007):

- *People living in remote areas*: In many remote areas, people for various reasons, can't access to education.
- *Women and girls*: Gender differences in access to education, a very big challenge in developing countries, in these communities is growing inequality between men and women (78 percent of the world's illiterate are women and girls.). Considering these issues, the need to educate girls and women and gender equality in access to education, the MDGs and the International Education for all was included.
- *People with physical defects*: E-learning has provided the opportunity to help people to overcome on learning obstacles, obstacles such as printed materials, text, video and audio to the use of vision and hearing needs.
- *People outside the school*: More than 130 millions people worldwide do not have access to education. With the implementation of distance education, thousands people have been covered by the education system.
- *Workers and employees*: In a world that is rapidly changing and transforming, lifelong learning is the only condition for survival. In fact, lifelong learning is a necessity for living in today's world. Hence, issues related to knowledge management and learning organization are considered. Therefore, the work force to comply with new requirements and new technologies, they need to learning, according to economic and time saving, it is the best source of training for employees.

2.4 Benefits of E-learning

E-learning has many advantages which among the most important of these advantages are includes (Behrouzian Nejad & Nejad, 2010; Noori *et al.*, 2007; Dabagh & Alibeik, 2004):

- Quickly and effectively improve students' knowledge level, commensurate with their activities.
- Training with a lower cost.
- Increase in skilled manpower and keep pace with technology.

- Having a clear efficiency.
- Flexibility, availability and ease of training.
- Being independent of time and space.
- Ability to use the different platforms regardless of their type.
- Saving time and travel expenses, etc.

3. Instructional design models in the E-learning

One of the most crucial prerequisites for successful implementation of e-learning is the need for careful consideration of the underlying pedagogy, or how learning takes place online. In (Engelbrecht, 2003): defines effective e-learning as "... the integration of instructional practices and Internet capabilities to direct a learner toward a specified level of proficiency in a specified competency". Instructional value is added by

- Customizing content for the needs of the learners.
- Presenting outcomes-based learning objectives
- Logically sequencing material to reinforce those objectives
- Basing navigational options (hypertext links) on existing and desired skills and knowledge of learners
- Designing objective-based, interactive learning activities that learners must complete to receive some form of evaluation.

Instructional design models for e-learning based on the processes of designing, developing and delivering curriculum material are usually closely aligned with traditional classroom learning models that specify some combination of planning, implementing and evaluation to organize and present curriculum content (Engelbrecht, 2003).

4. E-LEARNING MODELS

Based on models, we can provide information for training. Models are made visual and hold much content of the data. Based on e-learning standards and education, in the general topic of e-learning models, these models are considered (Yousefi, 2008; Dehghani, 2007; ISIRI, 2008): Synchronous - Live (Online), Asynchronous-Self Paced (Off line), Computer Base Training (CBT), Internet Base Training (IBT) and Web Base Training (WBT). Apart from the models described, may express models with different names, for example: Essen Learning Model (ELM) which is developed model and advanced in ESSEN University, ADL and IMS (which are models and standards).

4.1 Synchronous – Live Model

In this model learning is Online. Online learning is event which all participants at a time are online and communicate with them. Learn easy, practical conferences, audio and video conferencing, virtual classrooms and groups of trainees are examples of interesting in this model.

4.2 Asynchronous-Self Paced Model

In this model learning is Offline. Offline learning is event which in this, participants are not connected to the system simultaneously. Its structure is based on web-based and downloads. Learner must choose the content of pages that have already been prepared and is located at the site to use them. It may be designed which learner based on a specific timetable into or out of it to be. Therefore structure of this model is based on WBT. Table.1 shows the fundamental differences between the Synchronous and Asynchronous models.

TABLE.1 DIFFERENTIATIONS BETWEEN SYNCHRONOUS AND ASYNCHRONOUS MODELS

Synchronous	Asynchronous
Time limited and training period	No limits to time and training period
Is online	Not online
There is comprehensive guidance	Lack of comprehensive guidance
Education in groups already scheduled	Individual education
Communicate through live conference and chat	Contact via Email

4.3 Computer Base Training Model

In this model, training is offered more through memories, such as CD's. Course content can be produced with the techniques and technologies in prepare content software. It seems that in countries which there are no provided the needed infrastructure, this type of training can have efficient role. Reasons such as increasing the number of computers in households to produce educational software through CD, etc are important reasons for implementing this type of training.

4.4 Internet Base Training Model

Another topic at e-learning is this which can present contents of courses via available technologies in the network and web. This method requires a skilled workforce and infrastructure of the country's telecommunications network, for use of internet and designing educational contents.

4.5 Web Base Training Model

This model with consider to e-learning and follow the relevant standards based on the local network (LAN) and web. Therefore content is delivered through local networks and the web.

In some countries due to poor telecommunications infrastructure can be combined IBT and CBT methods and provide an acceptable model. As teaching and learning practice which is about 85 percent of cases in the study presenting via CBT method and troubleshooting and assessment which is about 15 percent of cases in the study conducted by IBT.

5. Economic evaluation of e-learning

In information technology due to the complexity of the tools, techniques and applications, calculate the amount of savings in costs is very important (Yousefi, 2008). Organizations that are run as a classic and traditional while the uses of information technology are often suffer from excessive optimism or pessimism. That means either thinks with use of information technology will increase efficiency of its application or have feared from use them and are looking for solid evidence to prove the new approach will increase productivity and lower costs. However e-learning benefits are immaterial and provides many great opportunities for organization, but to justify its economic and financial issues of interest to managers and organizations is important. Perhaps the first question before applying e-learning for organizations must be raised is that which whether e-learning saves costs be? Or in other words the investment on such a project is economically justified?

6. E-learning standards

E-learning standards are applied a set of common rules on e-learning and virtual learning. The rules identify how to produce online courses and online learning management platform for the delivery of these

units, so that together act concert. This rules for e-learning courses and learning management systems provides a common language, so if necessary to share information with other or with their exchange. This common rules as well as to allow different e-learning systems which act to be integrated. Further, these rules establish a standard language that specifies the components of e-learning courses. Finally standards enable us to build a strong educational technologies and we built the training based on individual needs and solve problems between consistent of systems which this could be helps protect customers' investment in education, training and content management systems. The reasons for e-learning standards are growth of innovations and initiatives in e-learning, reusability of electronic modules to participate in groups (Dehghani, 2007; ISIRI, 2008; Babu, 2001; Paramythis & Loidl-Reisinger, 2004).

The adoption of standards and specifications facilitates the dominance of platform independent, open technologies and promotes user-centric e-learning systems. Standardized technologies have several merits that protect and nurture an e-learning investment. These are in general:

- *Interoperability*: Content from multiple providers can be easily disseminated within consumers and a multitude of systems. Problems of translation, communication, information exchange are easily solved and transparent interaction of systems is achieved.
- *Re-usability*: Content and code can be assembled, disassembled and re-used quickly and easily. Additionally content objects can be adapted and used in a context other than that originally designed.
- *Manageability*: Systems can track the appropriate information about the learner and the content. Learners' profiles, educational target and content "speak the same language" so it is easier to find, manage and assembly "the right stuff" for each case.
- *Accessibility*: A learner can access the appropriate content at the appropriate time on the appropriate device. Content warehouses can be developed and become available to amateurs or professionals that use any application based on the common standards.
- *Durability*: Content is produced once and transplanted many times in different platforms and systems with minimum effort. Buyers are not "trapped" by a particular vendor's proprietary learning technology and their investments become permanent and adverse to risk.
- *Scalability*: Learning technologies can be expanded in functionality in order to serve broader populations and organizational purposes. An organization's return on investment in e-learning products can increase if they can be leveraged beyond their original scope.

The standardization of procedures in e-learning can be achieved through the co-operation of all participants of the e-learning community: developers, vendors and users should work together in order to create, validate, establish and disseminate standards for every e-learning task (Varlamis & Apostolakis, 2006; Stratakis *et al.*, 2003).

7. Classification of e-learning standards

According to (Dargahi *et al.*, 2007; Dehghani, 2007; ISIRI, 2008):

- *Metadata*: Educational content and catalogs should be in a similar way to support the listing, searching, storage and retrieval of educational objects through several means from between several of the labeled container. One of the most important components of e-learning standards is relevant standards to describe educational metadata. Metadata in fact is descriptive information of other data including educational content. Metadata is information about information.
- *Content packaging*: Facilitate the specifications and standards relating to educational content packaging transfer of this content from one educational system to another system. Package of

educational content is including educational items and also includes information on how to combine these objects to form larger units (such as mold sections, courses and periods). In these standards considered to be more rules for describing how to deliver content to learners.

- *History Learners (Learner Management)*: Are includes personal information, training plans, learning history, accessibility requirements, certifications and degrees, situation assessment and status of participation in education. Education and electronic learning systems to provide personalized and customized services or simply the maintenance of comprehensive information such as the learner's progress and current status, must manage information about personal history of comprehensive and other users. There are standards for representation and management of a comprehensive data model which there are by user modeling techniques.
- *Comprehensive Evaluation*: Using this standard e-learning and training systems especially Web-based systems will be able to exchange questions and themselves evaluation with together. This standard has descriptive terms to describe the contents and question systems and evaluations.
- *Runtime Environment*: One of the most common ways of taking advantage of the ability to reuse is separate the educational content from regional operation, type of presentation and their management. This standard does not describe the implementation details of particular technologies, rather more offers related objectives to users activities and roles involved in e-learning process, related computerized process and knowledge required for each of them. Institution in the field of e-learning activities that many of them are ISO standards, Aviation Industry Computer Based Training Consortium (AICC), PROMETEUS, IEEE, ADL, IMS LRN, CEN, ARIADNE, etc.

8. Conclusion

Undoubtedly, the emergence of new technologies we promise to provide equal educational opportunities for all and everywhere, the ability to deliver courses and a variety of online offers, but this alone does not lead to effective learning and deep. E-learning has been proposed as a necessary condition for entering the field of ICT and information society. This topic in connection with scientific environments such as universities and educational institutions is more important. According to models of e-learning, it can be concluded which in countries which there are restrictions on telecommunications and lines bandwidth, using online education models and via internet in most parts of this countries is almost impossible. In this circumstances can be used from WBT combination model. Moreover teaching and learning practice be done through the internet and offline form and part of the training that is needed to help the teacher with training in the specific construction and use of local area network (LAN) in the educational building and to be online. Since in the local network can providing line bandwidth is more, it seems this method is efficient, optimal and also can be do evaluation learners to online form in educational building, so is provided the possibility of control and enhancing of evaluating credibility.

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